



REYNOLDS ALUMINUM

REYNOLDS METALS COMPANY • RICHMOND, VIRGINIA 23261

1979 October 26

Mr. K. P. Bechely
Northern Regional Manager
Field Operation Section
Division of Land/Noise Pollution Control
Illinois Environmental Protection Agency
33 South Stolp Avenue
Aurora, Illinois 60504

Dear Mr. Bechely:

Please find attached the "On-site Disposal Area Plan" prepared for our McCook Sheet & Plate Plant by Environmental Engineering, Inc. This report details procedures for operating our on-site disposal area by two alternative operational methods. The report clearly supports the disposition of material at the top of the working face as the more desirable of the two operational methods.

Contouring and cover operations are identical for both operational methods. Initially, the area surrounding our quarry site will be contoured to redirect rainwater runoff away from the quarry. Final cover material will be applied to the previously filled quarry area as outlined in our report.

Disposition of materials at the bottom of the working face will involve substantially more material movement, disturbance of previously landfilled material, and daily operating practices which are only possible during dry weather due to safety considerations. Disposition of material at the top of the working face would provide an environmental safe method of material disposal. By working from the top of the quarry we would not encounter those undesirable problems associated with disposition of materials at the toe of the working face plus we would more quickly meet our desired objectives.

Based on the findings of this report we respectfully request that the Illinois Environmental Protection Agency grant our variance request from Rules 303, 305(a) and 305(b) of Chapter 7 of the Illinois Solid Waste Regulations.

If you have any additional questions or need any clarification please feel free to contact me at 804/281-2918.

Sincerely yours,

Charles R. Bent
Environmental Engineer
Environmental Control Department

/ct

Attachment

***** ON-SITE DISPOSAL AREA PLAN *****

FOR

**** REYNOLDS METALS COMPANY ****

*** MC COOK, ILLINOIS ***

PREPARED BY:

JAMES DOUGLAS ANDREWS, P.E.
ENVIRONMENTAL ENGINEERING, INC.
1320 SOUTH FIFTH STREET
SPRINGFIELD, ILLINOIS 62703
(217) 528-1545

***** On-Site Disposal Area Plan *****

*** Reynolds Metals Company ***

The Reynolds Metals Company disposal site is located on Reynolds' property, within Section 10, Township 39 North, Range 12 East, Cook County, Mc Cook, Illinois, and includes 5.5 acres intended for the disposal of stable demolition and construction waste material. The area which has been, and is being, reclaimed by the disposal operation is an abandoned, inactive dolomite quarry which was originally excavated to approximately 90 feet below the surface. Fifty-five to Sixty-five percent of the quarry volume has been filled in the past with demolition and construction waste and other plant waste material. Disposal is currently, and will in the future be, limited exclusively to stable demolition and construction waste generated by Reynolds Metals Company at the Mc Cook facility.

Two alternate Development and Operation Plans are presented here to accommodate the requirements of Reynolds Metals Company and to comply with current Illinois Rules and Regulations governing on-site disposal facilities. The alternate Development Plan A, shown on Drawing Number 79-129-A2, is one which would permit disposal operations to take place at the toe of the working face, with progression upward from the quarry floor, in successive lifts. The second alternate, Development Plan B, shown on Drawing Number 79-129-B2, is one which allows operations to continue with disposal from the top of the previously-filled portion of the quarry onto the working face. In all other operational aspects, the two alternate Plans are similar.

EXISTING SITE CONDITIONS

The area east of the site has not been used for disposal. Initially, in 1954, it was designed and developed for a metals storage area. The area was graded level and excess earth material was used for forming the existing berm and a service roadway. A subsurface drainage pipe system was also installed at that time to facilitate drainage from the area to the drainageway at the eastern border of the site.

Existing Site Conditions: (continued)

Disposal operations take place in the quarry in the western portion of the site. Trucks unload at the top of the previously-filled portion of the quarry and waste is periodically bull-dozed over onto the working face of the fill from the top. There is a service ramp going partially into the unfilled portion of the quarry which has been used only by bulldozers for general maintenance. This service ramp is usable only during dry weather and goes only to the existing rock "platform".

Much of the surface of the previously-filled portion of the quarry, north-east of the working face, slopes toward the unfilled portion of the quarry; and there is a drainage swale at the southeast edge of the quarry which drains surface water into the unfilled quarry. Both conditions allow excess run-off to enter the quarry. Because of the virtually flat surface in the unloading areas, water is retained at the top of the previously-filled portion.

DEVELOPMENT AND OPERATING PLAN

Initially, using the existing waste material at the top of the previously-filled portion of the quarry, and additional incoming waste material as needed, the area near the 90 contour level is to be built up to elevation 106 and sloped eastward from the working face as shown on Drawing Numbers 79-129-A2 and 79-129-B2, to prevent drainage from entering the unfilled portion of the quarry, and to prevent retention of water at the top of the filled portion of the quarry. The 106 contour delineates a small 2-foot berm which will prevent drainage from entering the pit from the surface and along the service ramp. Where this berm crosses the service ramp, its' slopes are to be shallow, as shown, such that traffic is not impeded,

The existing berm traversing the site is to be extended across the drainageway at the southeast edge of the quarry to prevent surface drainage from entering the pit at that location. The low area southeast of the berm is to be filled with stable demolition and construction waste, or earth material, and sloped southwest to prevent retention of water in that area. If demolition and construction waste is used to fill this area, it will be covered with a minimum 2 feet final compacted clay cover.

Development and Operating Plan: (continued)

Cover material, as it becomes available, is to be stockpiled in the area designated on Drawing Numbers 79-129-A2 and 79-129-B2.

When the top of the previously-filled portion of the quarry has been brought to within two feet of final grade shown on Drawing Number 79-129-3, a minimum of two feet of final compacted clay cover is to be applied to the surface. The covered area will include all of the previously-filled portion of the quarry extending to within 100 feet of the working face. This area will be seeded as soon as practicable after cover placement to prevent erosion.

Alternate A: Deposition at the Toe of the Fill

While grading and cover operations are occurring at the top of the previously-filled portion of the quarry, incoming demolition and construction waste is to be bull dozed from the top of the filled area, down the service ramp, and deposited to the northwest and southeast of the existing platform to gradually build up to the dozer ramps and to widen the platform to the contours indicated on Drawing Number 79-129-A2. When the platform and ramps are completed, the service ramp leading into the quarry is to be graded to a slope of 15 percent maximum. This grade is not substantially different from the existing grade. However, if it becomes necessary to excavate minor portions of the service ramp to achieve grade, the excavated material may be required to be disposed of off-site.

The service ramp will then be upgraded to a roadway surface suitable for truck traffic with stable demolition and construction waste. Despite the surfacing, due to the steep grade, the roadway can then be used safely but only during dry weather. Once the road is complete, trucks may use the road to unload on the platform. Dozers will push the waste the remaining distance down the dozer ramps to the floor of the quarry. Fill will begin against the northwest and southeast walls and progress inward toward the dozer ramps (see Section 8:8, Drawing Number 79-129-A2). Demolition and construction waste is to be deposited in successive lifts in this manner until fill has achieved elevation 60. At this time trucks will no longer

Alternate A: (continued)

be limited to the platform and may unload directly at the toe of the working face. When the remaining quarried area has been filled, operations will proceed back up the roadway, and the entire area will be brought to two feet below the final contours shown on Drawing Number 79-129-3. Two feet minimum of final compacted clay cover will be applied to the remaining fill area, and seeded as soon as practicable.

Alternate B: Deposition from the Top of the Fill

Temporary roadways across the top of the previously-filled portion of the quarry will allow trucks to proceed to the uncovered 100-foot area behind the working face, to unload. Dozers will then push waste down onto the working face. Operations will continue in this manner, with the working face progressing to the southwest, until the remaining quarried area is filled. The service ramp into the quarry will remain open for maintenance purposes and final operations will progress back up the ramp. The surface will then be brought to within two feet of the final contours shown on Drawing Number 79-129-3. A minimum two feet of final compacted clay cover will be applied and seeded as soon as practicable. Alternate B is operationally safer and would bring the site into general compliance quicker than Alternate A.

COVER APPLICATION:

In neither Alternate Development Plan is daily cover considered practical or necessary. The primary purpose of daily cover operations is to prevent odors and blowing litter, and the presence of rodents, birds and flies at the site. None of these problems are present at the site, nor are they expected to be in the future. There is nothing in the demolition and construction waste to attract rodents, birds or flies nor to emanate odors.

Once the re-grading operation is completed at the top of the previously-filled portion of the quarry, 2 to 14 feet of demolition and construction waste with its accompanying fine-grained matrix, will cover the surface of previously-deposited waste material. The unfilled portion of the quarry will be filled

Cover Application: (continued)

entirely with demolition and construction waste. A two-foot minimum of final compacted clay cover over that should be more than sufficient to minimize infiltration, and additional cover should not be necessary.

FINAL SITE CONDITIONS

Final site contours are designed to encourage run-off from the completed and covered quarry fill and to allow utilization of the site.

SITE CAPACITY AND TIME SCHEDULE

Because of the nature of demolition and construction disposal, where large volumes may be generated in relatively short time periods, and small volumes over longer periods of time, it is difficult to predict an accurate site life. At the present time, under normal conditions, 50 cubic yards per week may be a reasonable estimate of incoming waste volume. However, the destruction of one large building could, within a very short time, demand a significant portion of the remaining unfilled quarry volume.

The fill volume currently available in the remaining unfilled portion of the quarry is approximately 3,667,000 cubic feet, or 136,000 cubic yards. Under both Alternate Plans, the fill needed to bring the surface of the previously-filled portion of the quarry to the required grade is approximately 200,000 cubic feet, or 7,400 cubic yards of demolition and construction waste. Approximately one-third of the required volume is currently stockpiled in the existing unloading areas at the site. Even at the conservative estimate of an incoming 50 cubic yards per week, it is reasonable to estimate that the surface of the filled portion of the quarry can be brought to the design grade within two years time.

Within the two-year time period, cover shall be accumulated and stockpiled, and the berm at the southeast edge of the quarry shall be constructed. The cover material required will be approximately 250,000 cubic feet, or 9,260 cubic yards, to cover the previously-filled portion of the quarry. Because cover material is not available on-site and must be hauled from off-site, an additional year should be allowed for cover operations during which time deposition of demolition and construction waste will proceed in the unfilled quarry.

Site Capacity and Time Schedule: (continued)

If Alternate Development Plan A is to be used, an approximate volume of 224,000 cubic feet or 9,000 cubic yards, stable demolition and construction waste will be required to complete the truck turn-around and unloading platform, with 2:1 sideslope dozer ramps. This could involve as much as 3.5 years time; and considering weather restrictions of ramp and roadway use, could involve twice that amount of time.

At this time it is estimated that the remaining life of the unfilled portion of the quarry is approximately 20 years. During that time cover will continue to be accumulated and stockpiled. When the remaining volume has been filled, an additional 276,000 cubic feet, or 10,200 cubic yards of cover material will be required.

CONCLUSIONS AND RECOMMENDATIONS

Of the two alternatives outlined herein, it is considered that Development Plan B is the safer and more favorable from an operational standpoint. It is not believed that any environmental advantage is to be gained by deposition at the toe of the fill as opposed to deposition from the top of the working face. Due to the nature of the waste material it is unlikely that greater compaction could be achieved by dozer reworking as opposed to the gravitational compaction which would occur by deposition from the top of the working face. Also, due to the rather steep grade into the quarry, and the limited platform area, there are safety considerations in using Development Plan A.

The roadway and dozer ramps can only be safely used during dry weather. Any other access, or roadway with a lesser slope, into the bottom of the quarry, is not possible to construct without disturbing large volumes of previously-deposited waste material. Under Alternative A, during wet weather, stockpiling of the waste material near the top of the working face will promote ponding of water at the surface of previously-filled areas.

With the two-year plan for berming, filling and grading at the surface of the previously-filled portion of the quarry, and an additional year's cover operation, under Alternate Plan B, the site can be brought into general compliance within three years time. Alternate Plan A would require an additional minimum of 2.5 years and probably longer, considering wet-weather conditions.

Conclusions and Recommendations: (continued)

Alternate Plan B is strongly recommended as being the safest, most efficient, and least time-consuming method of operating and maintaining the site in an environmentally sound condition of compliance.